

aliphatic hydroxy carboxylic acid monomer.

77. The composition according to Claim 41 wherein the linear polyester is obtained from the combination of a diacid and a diol.

REMARKS

The specification has been amended to further indicate the priority basis for this application.

The claims have been amended to satisfy the objections under 35 USC 112 made by the Examiner and to more particularly define the invention.

Claims 39-74 were rejected under 35 USC 112, second paragraph as indefinite. Claim 39 has been amended and rewritten as Claim 75 to define the degree of substitution of the starch esters and to indicate that the linear polyesters are obtained from the specified aliphatic hydroxy-carboxylic acids or the combination of a diacid and diol having the specified formula. It is clear that the aliphatic hydroxy acid is used to obtain or form the linear polyester.

Claim 55 has been amended to provide proper antecedent bases for hydroxy caproic acid.

Claim 41 has been amended to indicate that the ester groups of the esterified starch have 2 to 8 carbons.

Claim 48 has been amended to indicate that the starch esters are a blend of two starch esters having different ester groups.

The term "derived" has been replaced in Claims 39, 51 and 52 with "obtained" to better define the invention.

Enantholactone as found in Claim 56 is believed proper since it defines a lactone obtained from hydroxy-enanthic acid (i.e., hydroxyheptanoic acid).

The word "plastifying" in Claim 72 has been replaced with "plasticizing".

It is believed that in view of the noted amendments and remarks, the claims are now presented in proper form and satisfy the requirements of 35 USC 112.

Claims 39-74 were rejected under 35 USC 103 as unpatentable over Whistler et al. in view of Lotti, Wolff et al., Lipinsky, Elion, Lay et al., Buchanan, Klug and Fordyce. This rejection is respectfully traversed for the following reasons.

The claims as now presented define a particular degradable composition comprising a starch ester having particular ester groups and a specified degree of substitution and a defined linear polyester which is either obtained from aliphatic-carboxylic acids with a specified formula or a polyester having a specified formula and obtained from the combination of a diacid and a diol. This composition can be used to provide shaped articles which are biodegradable and have good dimensional and physical properties under both low and high humidity conditions.

Whistler et al. disclose plasticized amylose triacetate films. Whistler further refers to films of

cellulose triacetate and amylose triacetate. However, the reference is not concerned with biodegradable compositions comprising starch esters of a specified DS range or to its combination with specific linear polyesters. The reference is not concerned or directed to such a composition and does not suggest a composition which not only provides biodegradable products but also products which have excellent physical characteristics at varying humidity conditions.

Examiner has cited a number of secondary references but they do not make up the deficiency of Whistler et al. Lotti et al. disclose blends of poly(3-hydroxybutyrate-co-3-hydroxyvalerate) with cellulose acetate butyrate and cellulose acetate propionate. The reference does not suggest starch esters and particularly those as claimed having a specific DS of 1.5 to 2.9. Additionally, the reference only is directed to specific hydroxybutyrate and hydroxyvalerate polymers with defined cellulose acetates. There is no suggestion that these or other polymer compounds can be used with starch esters.

Wolff et al. disclose mixed amylose triesters. There is no suggestion of starch esters having a defined DS range and also its use in combination with defined linear polyesters. There is no concern with biodegradability and the advantageous properties provided by the composition being claimed.

Regarding Lipinsky et al., it is first noted that the disclosure is not considered an effective reference since its effective date is subsequent to the filing date of the priority application for this invention.


Furthermore, Lipinsky et al. is directed to cellulose esters in combination with degradation polymers such as lactones. There is no suggestion of specific starch ester compositions to provide the products with improved physical and dimensional properties as disclosed by this invention.

Elion discloses starch acetates made from agricultural flours. Lay discloses the addition of hydrophobic polymers to starch. Buchanan discloses blends of cellulose esters with aliphatic or aromatic polyesters. Klug discloses starch esters used in making films and shaped articles. Fordyce which was not cited or a copy provided, apparently discloses ethyl toluene sulfonamide plasticizer.

After a review of the secondary references, it is not apparent that references are combinable with Whistler et al. to suggest or make obvious the claimed invention. While Whistler et al., as discussed above, does disclose the use of amylose triacetate with plasticizers to form film, it does not suggest the use of the specific starch esters or linear polyesters being used. Furthermore, the reference indicates in column 1, first paragraph, that starch as well as its substitution products are basically unsuitable for film, fiber or plastic production. The remainder of the reference is concerned with amylose triacetate. The secondary references do not make up the deficiency of Whistler et al. and there is no teaching or suggestion of combining the references to make the claimed invention obvious.

Accordingly, in view of the above amendments and remarks, it is submitted that the claims now presented are in proper order and patentable over the references cited. Reconsideration and allowance of this application is earnestly solicited.

Respectfully submitted,


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September 25, 1995